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TECHNOLOGY DEPT.

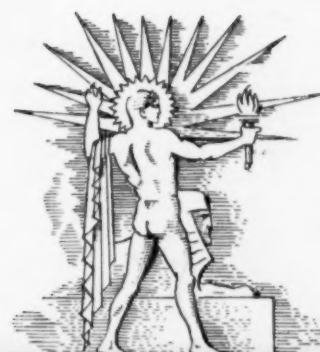
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JUL 9 - 1940

DETROIT

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE.



July 6, 1940

Non-Poisonous Gas

See Page 4

A SCIENCE SERVICE PUBLICATION

Do You Know?

Ceylon produces over 1,500,000 pounds of *citronella* oil in a year, and sells nearly 40% to the United States.

The Netherlands Indies have almost a monopoly on the world's supplies of natural *quinine*, but a good deal is made synthetically.

The world's speed record for *house painting* was broken at Omaha, when 110 workmen painted a house in 4 minutes, 14 seconds.

Oil experts say that only the heavier *asphaltic oils* are really black, while others are greenish, dark reddish, or even straw colored.

A German report says that Norwegian archaeologists, with German assistance, have resumed excavation of the grave sites of *Viking* kings near Oslo, where once the famous Oseberg ship grave was uncovered.

Popular with visitors was a recent National Park Service exhibit which invited any one to identify nine mounted *hawks* by plugging connections on an electrical punch board, with the reward of a buzzer sound when the right name was punched.

Oil men were interested to learn that when Hollywood wanted to show Robert Fulton's 1807 steamboat, the Clermont, they did not duplicate a pioneer engine but installed a hidden *diesel* tractor and made steam of compressed air and oil vapor and smoke from a hidden smudge pot.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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TEXTILES

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Tests indicate that apple tree prunings make good *cigarette paper*.

Some new-type *life boats* are propelled, not by oars, but by hand levers that turn a propeller.

Using a new *radiophone*, parachuting fire fighters in national forests can keep in touch with the plane pilot and headquarters after landing.

Among fighting scenes more than 1,000 years old, painted on caves in central India, is a picture of four men fighting from the top of an *elephant*.

No country is entirely self-sufficient in *minerals*.

New *booster engines* for trucks are designed to give an extra push in hill climbing.

Why *earthenware* dishes sometimes crack and craze: the body and glaze do not expand and contract at the same rate with heat.

When Pliny over 2,000 years ago wrote about wormy apples, he was doubtless complaining about *codling moths*, says an entomologist.

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MEDICINE

Cancer's Spread May Be Prevented By Discovery

Research at University of Pennsylvania Discloses That Disease Can Spread Through Valveless Veins

THE SPREAD of cancer from one part of the body to another, which frequently makes it impossible to save the patient's life even by removing the original cancer, may be prevented as a result of a discovery announced by Dr. Oscar V. Batson, of the University of Pennsylvania Graduate School of Medicine. (*Annals of Surgery*, July)

The discovery applies to the spread of germ diseases or infections. It is considered by medical authorities so important that the editors of the *Annals of Surgery* rushed Dr. Batson's technical report through the presses six months ahead of the usual schedule to make it available to the medical profession in the next (July) issue.

The new route by which cancer and germs can spread through the body is

along the "vertebral veins," that is, the valveless veins about the vertebral column and their connections. The discovery was made by injecting opaque material used in X-ray diagnosis into the veins of cadavers and of living animals.

The injections showed that blood, and with it cancers and germs, can spread along the body through the vertebral veins, by-passing the heart and lungs. This is particularly likely to happen in coughing and straining.

As a result, doctors can no longer feel that as long as the lungs remain clear, the possibility of general spread of cancer or infection is remote. This idea was based on the long held view that the lungs are the filter for infections and tumors spreading in the body. According to this old view, cases of general

spread without lung involvement were called "paradoxical," although the paradoxes might occur in as many as 50% of the cases.

"Routine examination of the lungs by X-ray is therefore not enough," Dr. Batson declares in view of his discovery of the new route of cancer and germ spread. "The entire spine and adjacent parts must be routinely and repeatedly surveyed. The importance of early diagnosis and treatment becomes much more important."

"Straining and heavy work may have to be avoided and prophylactic irradiation (by X-rays or radium) of large areas, particularly in pelvic, breast and lung tumors, may have to be introduced."

Dr. Batson explains his discovery as follows: "Ordinarily, tumors and infections are supposed to travel by lymph vessels and veins to the heart. Secondary tumors and infections may appear along this pathway. Before being spread to the rest of the body this contaminated blood stream must go through the lung capillaries (tiny blood vessels)."

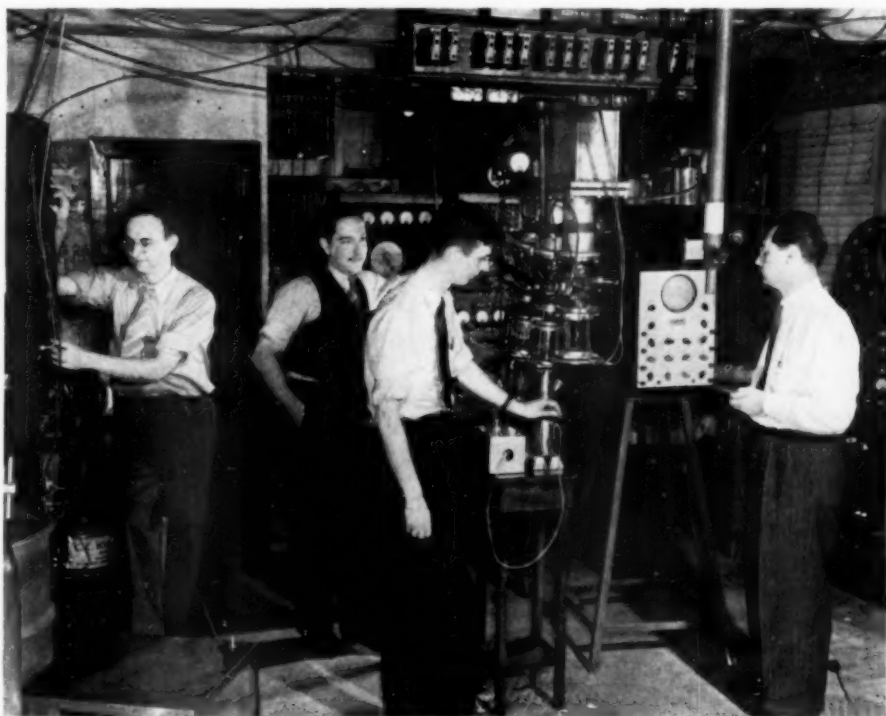
"But many times no secondary lesions (tumors or germ injuries) are found in the lungs, 50% to 70% in some instances."

"These secondary lesions are especially numerous in the spine and skull. There has been no adequate explanation for this 'paradoxical' spread."

"In an anatomic specimen, injection into the veins would be expected to, and generally does, follow the big veins to the heart and lungs. However, injection of breast veins and small pelvic veins results in the injection mass filling the valveless vertebral veins and their connections."

"In the living monkey the usual course of injected material is into big veins. But when the pressure produced by straining or coughing is imitated, the flow is along the vertebral veins."

Science News Letter, July 6, 1940



CAN RELEASE ATOM'S ENERGY

Drs. W. E. Stephens, W. E. Shoupp, R. O. Haxby, and W. H. Wells are shown here at work in their laboratory. These are the Westinghouse physicists who have just discovered that gamma rays can release atomic energy from uranium.

PHYSICS

New Way To Split Uranium And Release Energy Found

A NEW way to split the uranium atom with release of large amounts of energy within it was reported from the Westinghouse Research Laboratories.

Gamma rays, generated by proton bombardment of fluorite with the 95-ton electrostatic atom smasher, are found to split the uranium atom, releasing 30 to 100 times the energy expended in causing the fission.

Discovery in Germany early in 1939 that relatively slow and unenergetic neu-

trons, electrically neutral particles in all matter, can tear the uranium atom asunder, releasing approximately 200,000,000 electron volts, gave hope that practical release of atomic energy might be achieved.

Since gamma rays are radiation like electricity, light, and X-rays, consisting of photons, Dr. E. U. Condon, Westinghouse's associate research director, suggested in announcing the discovery that the new uranium fission phenomenon be called "phission."

Whether the new photo-fission or phission of uranium will bring closer to realization the actual release of atomic energy is problematical. The big task is still the concentration of enough uranium 235 (a twin or isotope of the commonest sort of uranium mass 238) to provide a

real test as to whether the splitting and energy release is self-perpetuating, or what is called a chain reaction.

The new research has provided an alternate method of starting the disintegration. The form of radiant energy used is 6,000,000 electron-volt gamma rays, similar to, but more penetrating than X-rays.

The research will be reported shortly in a letter to the *Physical Review* communicated by Drs. R. O. Haxby, W. E. Shoupp, W. E. Stephens and W. H. Wells.

If uranium atoms could be used as an energy source in the same manner that coal is burned, their fission energy would be some 50,000,000 times as great as the combination of coal and oxygen, atom for atom.

Science News Letter, July 6, 1940

CHEMISTRY

Non-Poisonous Gas Is Also Important in a War Role

Carbon Dioxide Vapor Puts Out Incendiary Fires, Inflates Rubber Boats and Keeps Planes From Sinking

WHILE gas masks are slung on the shoulders of millions of European soldiers and civilians in expectation of deadly poison-gas attacks, a harmless and non-poisonous vapor so far has played a starring role in World War II. That vapor is carbon dioxide.

Those rubber boats used by German columns to swarm over water defenses are inflated by a twist of a valve on a carbon dioxide bottle. Fire in the engine of a fighter plane is snuffed out during combat by a cloud of carbon dioxide released from a tiny tank in the cockpit. Life vests of pilots forced down at sea are instantly inflated by this same gas.

Air field fires, from explosive or incendiary bombs, are blanketed and smothered with carbon dioxide carried in high-speed fire trucks. And at hundreds of English pilot-training centers, a blizzard of super-cold carbon dioxide snow is thrown over a crashed plane to beat back flames and enable rescuers to pull out the student crew.

Two properties of carbon dioxide account for its usefulness in wartime: Its tendency to liquefy under pressure and expand quickly and safely when released, and its ability to smother flames by cut-

ting off their oxygen supply. The first quality makes it ideal for a variety of in-

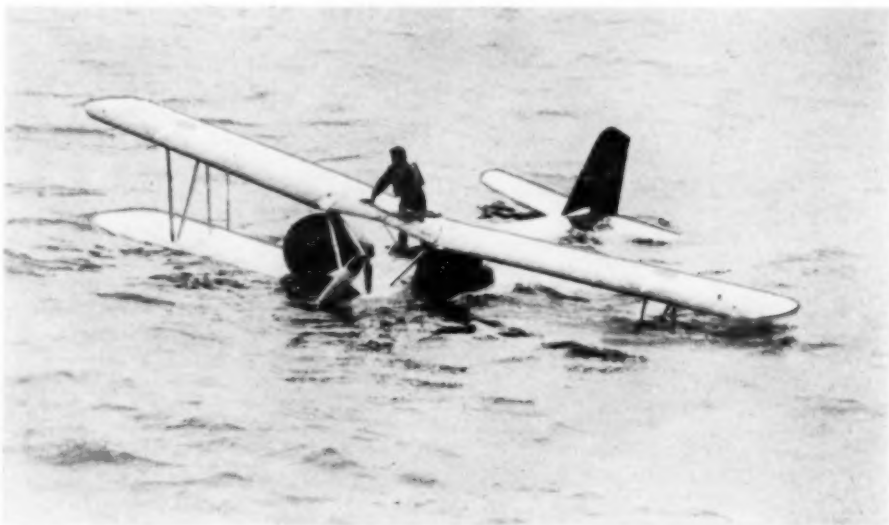
flation purposes, and the second accounts for its wide use on the fires which are a trademark of mechanized war.

Incidentally, the carbon dioxide thus used is basically no different from the vapor that makes our bread rise, forms the collar on our beer and the fizz in our soft drinks, and in solidified form is widely used to freeze and protect food-stuffs. We breathe tons of it every year, for it is part of the air itself.

All branches of the military machine now depend on this cheap and plentiful gas, which is derived from coal combustion and as a by-product of other industrial processes. Clouds of the gas are shot into engine rooms of battleships in event of fire from shells or bombs or from leaking fuel tanks, and it penetrates quickly through gratings and past obstructions to smother the flames.

Naval aircraft engineers have developed a number of vital uses for carbon dioxide. When a plane from an aircraft carrier misses the deck or is forced down at sea, two rubberized bags automatically pop from the fuselage to keep it afloat until help arrives.

Another naval device employing this gas is the rubber life raft, carried in folded-up form on overwater flying, but inflated in three seconds by a turn of a valve on the light steel gas bottle attached to the stern. The naval flyer's rubber life-vest is similarly inflated by a tug on a cord which dangles at his waist, and



FIRE AND WATER ALIKE

Both are fought with carbon dioxide. The picture on the cover shows a fire in an airplane engine being smothered with clouds of carbon dioxide "snow" from a portable fire truck. Here is an official U. S. Navy photo showing a flyer who has been forced down at sea awaiting rescue. Visible just in front of him are the two "water wings" which were automatically inflated when the plane hit the water, and now keep the plane afloat.

which releases the gas compressed in a tiny steel vial.

On both navy and army planes, engine fires caused by bullets or backfires or leaking oil lines now can be smothered in full flight miles above the earth. A bottle of the compressed carbon dioxide is connected to perforated piping which loops around the engine, and a quick pull of a control handle shoots a cloud of the gas into every crevice of the engine compartment, smothering the flames despite the force of the slipstream. Some military planes have fire detectors which discharge the gas automatically, thus leaving the pilot's hands free. Engineers explain the action of the gas by saying that it cuts the air's normal 21% oxygen content to 14% or 15%, at which point gasoline or oil cannot burn.

Thus has a non-poisonous gas become one of the most useful adjuncts of a modern army and navy. And while research continues on other uses for this versatile vapor, so far much of the credit for perfecting the high-pressure uses of this gas goes to a New York engineer named Walter Kidde. His firm first demonstrated the commercial use of this fire-smothering vapor by invading the shipping capital of London, England, and renting an old cargo ship for a dramatic demonstration. After inviting London shippers aboard the vessel, they drenched the hold with gasoline, set it afire, and smothered the roaring blaze with a quick discharge of the gas.

Peacetime uses for carbonic gas are quick to develop, too. New York's Municipal Airport protects its commercial traffic with a counterpart of a gas truck designed for the navy. Factories and oil refineries are installing similar trucks and trailers which carry large quantities of carbon dioxide. Plant interiors are being fitted with wheeled gas extinguishers and, in many cases, with automatic built-in systems that flood whole rooms with the gas in event of fire. Already, commercial planes are protected against engine fires in the air by carbon dioxide systems.

Science News Letter, July 6, 1940

● RADIO

Prof. Ernst A. Hauser, of Massachusetts Institute of Technology will describe a new synthetic mica in discussing "New Materials from the Earth," as guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, July 11, 4:00 p.m., EDT, 3:00 EST, 2:00 CST, 1:00 MST, 12:00 PST.

Listen in on your local station. Listen in each Thursday.



IN ASBESTOS SUITS

Fearsome looking figures are these members of the Navy's mechanized fire-fighting unit, using carbon dioxide to battle flames.

NUTRITION

Japan's Rice Shortage May Bring Crisis in Fall

Nature, Not China, Dealt Heaviest Blow at Nippon When Different Regions Suffered Rain and Drought

THE WAR of hunger is creeping near to Japan's door, as officials struggle to outwit a rice shortage, the first in Japan's experience in twenty years. If they can skimp till the new harvest in November, without a repetition of 1918 rice riots, they may be on firmer ground.

Nature, not beleaguered China, shot this damaging bolt at Japan, when too much rain and too little rain fell on different regions of the empire in the past growing season.

The result, analyzed by agricultural economists, spells a serious outlook for Japan's "staff of life." Ordinarily one of the world's most self-sufficient nations as to her entire food supply, Japan consumes about 25 billion pounds of rice a year, grows four-fifths of it on farms of Japan proper, gets the rest from her colonies of Chosen (Korea) and Taiwan (Formosa), plus a little from Thailand (Siam).

But the past season's rice crop in

Chosen was 40% less than the previous year, and Taiwan's crop the smallest in five years. By rigid economy, Japan is trying to reduce rice consumption this year by a full billion pounds, while banking on larger plantings and a better crop in the 1940-41 season.

Pinching and scraping to feed the Japanese includes such prospects as these:

Importing about three billion pounds of rice, some of which may force drawing on Japan's credits abroad, which she prefers to spend on war material. Some of the rice is being bought from Thailand (Siam), and some is reported coming from central China, despite China's own rice shortages.

Reducing Chosen's rice consumption 25% by a proposed rice distribution system there, and substitution of other foods.

Rice is being polished only about 70%,

since last December, in spite of Japanese aversion to eating brown rice.

Sake brewers have been restricted to half their ordinary production.

The ultimate possibility that Japan

may have to turn to potatoes, or some other staple more economical to produce than rice, is foreseen as one long range solution of Japan's food problem.

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MEDICINE

Calcium May Be Weapon for Defense Against Lead Poison

CALCIUM, bone-building mineral, may be the weapon for defense against lead poisoning, potentially widespread hazard due to contamination of "practically all common foods" with traces of lead.

"Increased amounts of calcium in the diet diminish the amount of lead which is stored in the body," Dr. Ludwig G. Lederer and Dr. Franklin C. Bing, of Chicago, announced. (*Journal, American Medical Association*, June 22)

Extra calcium in the diet, they discovered, retarded the deposition of lead in the bones of growing animals. The bones are the chief place where lead is stored in the body.

"Even minute amounts of lead may be detrimental to health if they accumulate in the body," the Chicago doctors pointed out in discussing the hazard of the small amounts of lead which recent studies have shown in common foods.

"To draw conclusions about the significance of the traces of lead that are ingested under ordinary conditions would require careful study and more data than now are available . . .

"On the basis of evidence now available, lead must be considered a potential hazard and all possible contamination of food products with lead should be guarded against."

How calcium acts to keep lead from accumulating in the bones is not definitely known. Apparently it is the result of chemical reactions in the intestinal tract. Presumably the lead is made insoluble so that it cannot be carried to the bones.

The calcium used in the study was calcium carbonate. Whether the calcium in milk would have the same beneficial effect cannot be stated without further experiments.

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skin due to impermeability to air with resulting perspiration and chemical absorption into the skin. The follicular-papular character of the eruption suggests a chemical effect on the hair follicles of a specific type. The dissemination beyond the site of contact also indicates chemical absorption rather than a purely mechanical irritation. The exact chemical that is responsible for this effect remains to be determined. Our assumption would be that 'elasti-glass' tends to hydrolyze when in contact with the moisture of the skin and that in this way irritating compounds of the tricresyl, tin or some other chemical group are produced.

"Further studies should be undertaken to determine the nature of the skin irritant, and the various steps in the manufacturing process should be checked for possible sources of error before this material is permitted to be used on a more extensive scale in articles of wearing apparel. In fairness to the manufacturers, it should, however, be stated that clinical trials on actual wearers of the finished products were carried out for some time before they were released and that only an occasional case of irritant effect was observed."

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CHEMISTRY

Get Marihuana Crystals More Powerful Than Drug

COLORLESS crystals more than 100 times as effective as marihuana have been isolated from this narcotic by a research team of California Institute of Technology.

This is the first time the active principle of the drug, familiar to young moderns as the active ingredient of "reefers," has been obtained in chemically pure crystalline form. Prof. A. J. Haagen-Smit and C. Z. Wawra, J. B. Koepfli, G. A. Alles, G. A. Feigen and A. N. Prater, state in their report. (*Science*, June 21)

The powerful crystals, which, needless to say, will only be available for scientific research, have been named cannin. Research to determine their chemical structure will be next on the program of nation-wide research efforts sponsored by the U. S. Treasury Department and looking toward the possible development of a narcotic-free hemp plant which would have industrial and agricultural value.

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MEDICINE

Cases Of Skin Disease From "Elasti-Glass" Garters

TWO CASES of skin irritation from wearing garters, suspenders, and wrist watch straps made of the new synthetic plastic called "elasti-glass" are reported by Dr. Erwin P. Zeisler of Chicago to the American Medical Association.

Various Chicago physicians reported an additional eight cases to Dr. Zeisler during the first three weeks of May. About 20 cases have been reported from various other parts of the country. At least 250,000 garters, wrist watch and suspender sets of this material have been sold, Dr. Zeisler states. (*Journal, American Medical Association*, June 29. See *SNL*, Jan. 27)

An increase of the skin trouble during hot weather is foreseen by Dr. Zeisler

because of the "impervious character of the material and the greater chance of chemical absorption."

As to the cause of the condition, he states: "My conclusion from observation of these two cases is that the dermatitis (skin irritation) is due to a specific sensitivity induced by intimate and prolonged contact with a heavy nonporous, impervious material. The negative patch tests are obviously not a sufficient criterion of noninjurious effects, as the ordinary method of applying the test material to the skin does not correspond to the effect of wearing a constricting band against the skin over a long period of time. The dermatitis, in my opinion, is the result of mechanical friction, overheating of the

About 16 million people live within 250 miles of the proposed *Green Mountain National Park* in Vermont.

PHOTOGRAPHY

Stereoscopic Movies in Home Possible with New Invention

**Pictures Are Taken With Two-Lens Camera of View
As Seen by Two Eyes, Then Shown With Two Projectors**

PRESENTATION in the home of stereoscopic movies that show full relief are made possible with a new invention by Edwin H. Land, of Boston, and Joseph Mahler, of Nemecky Brod, Czechoslovakia. For it they have just been granted United States Patent No. 2,203,687. In a paper in the *Journal of the Optical Society of America*, (June) the method is described, and the name "vectograph" is given to pictures so produced.

Mr. Land is the inventor of polaroid film, which causes light passing through it to vibrate in a single plane, instead of in all directions, as it does ordinarily. This has previously been used for stereoscopic motion pictures; for example, at the New York World's Fair, where visitors to one building can see three dimensional movies of an automobile being assembled.

To do this, the pictures are taken with a two-lens camera, one lens recording the view as it would appear to an observer's right eye, the other as it would look to his left eye. With two projectors, or a single projector using an attachment in which the light is divided into two beams, these pictures are shown together on the same screen. To the naked eye, they are somewhat blurred. To avoid this, polarizing films are placed over the projecting lenses, so that one image, say that for the right eye, is formed of light vibrating up and down, the other of light vibrating from side to side.

When a member of the audience is provided with special polaroid viewing glasses, these are separated. Over the right eye is placed a film that passes only up and down light, while the one for the left eye admits side to side vibrations exclusively. The pictures are sorted out, and each eye sees only its proper view, as it would at the original scene.

The new invention, however, allows such movies to be shown with an ordinary projector, either of the theater or home type, without any special attachment, other than the viewing glasses used by the audience. For still pictures,

special lantern slides can be used in an ordinary magic lantern.

The two pictures are superimposed on a single film. Each image is itself formed in a polarizing layer, by destroying the polarizing properties over a limited area corresponding to the picture. Thus, when projected on a screen, the parts of the picture that both eyes should see are formed of unpolarized light. This, naturally, goes through either viewing lens. The part of the picture that one eye should see is made of polarizing material set to the proper direction of vibration for that eye. For the blacks in the picture, where neither eye sees any light, both layers retain their full polarizing effect. Having their planes of transmission at right angles, no light passes through these parts.

The patent specifications suggest a number of methods by which the polarizing properties of the films may be destroyed to produce the images. Some are with chemicals, others make use of the action of light or other radiations. Gradations of light and shade in the picture may be obtained, it is claimed, by only partially depolarizing the layers. Further, the pictures do not need to be projected,

but may be made as prints, still requiring the use of the viewing glasses.

Another patent, number 2,204,604, has been granted to Mr. Land for one method of producing the vectograph images. By the action of light, the film is so treated that when exposed to certain vapors, its polarizing power is reduced or destroyed. Probably pictures, and other images, so produced will have applications in advertising displays.

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MEDICINE

Eye Drop Chemical Is New Antidote for Scorpion

















TWO new antidotes for poisoning from the scorpion's sting are suggested by Dr. Ali Hassan and Ahmed Hassan Mohammed, of the Faculty of Medicine, Egyptian University, Cairo. (*Lancet*, June 1)

Atropine, familiar to laymen chiefly as the drops put in one's eyes for examination for eyeglasses, and ergotoxin are the two drugs suggested as scorpion toxin antidotes. They could be used alone or with the specific antiserum to cure persons poisoned by a scorpion's bite, it is suggested.

No human trials are reported but one injection of the two drugs simultaneously given within two hours of a fatal dose of scorpion toxin saved the life of a dog. Rats were saved by either drug alone.

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Chemists report that adding two per cent of glycerine to *peanut butter* prevents the oil from separating out.

T E L E F A C T											
THE MOST POPULAR MONTHS FOR MARRYING											
JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
											
	ARGENTINE		ITALY	SWITZERLAND	U S A	SCOTLAND		BELGIUM	FRANCE	HUNGARY	AUSTRIA
											
	BULGARIA				CANADA				GERMANY		NEW ZEALAND
											
	RUMANIA				FINLAND						NORWAY

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MILITARY SCIENCE

**"Live" Mines at Canal
No Danger to Navigation**

THE "live" mines planted across the approaches to the Panama Canal constitute no danger to ships in those waters, because they are controlled by electrical connections to observation stations on shore, and are rendered harmless to all except hostile vessels.

Ordinary contact mines, such as have been sown by scores of thousands in European waters by both belligerents, are independent of all controls. They explode on first contact; being brainless robots, they can not discriminate among friends, foes or neutrals.

Mines such as those used at Panama and elsewhere for harbor defense purposes are serviced by the Coast Artillery Corps. Elaborate submarine cable connections must be laid before the mines are launched. Planting such a mine field requires the services of expert electricians and takes considerable time. At least the skeletons of controlled mine fields are maintained even in time of peace, and frequent practice is expected of the technical troops in charge of them.

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GENERAL SCIENCE

**Scientific Workers Urge
Aid to the Allies**

THE UNITED STATES government is urged "to take all steps necessary for hemisphere defense, including such aid to the Allies as most effectively furthers this aim," as the most reasonable program to keep the United States at peace and to restore peace to the world, in a statement by 30 members of the Boston-Cambridge Branch of the American Association of Scientific Workers. It appears in *Science* (June 21). The group of signers includes Dr. Walter B. Cannon, Harvard physiologist, last year's president of the American Association for the Advancement of Science, of which *Science* is the official organ, and Dr. Karl T. Compton, president of the Massachusetts Institute of Technology.

The statement refers to a resolution passed by the Boston-Cambridge Branch of the Association in March, which recommended the "support of all reasonable programs . . . which will preserve peace for the United States and bring peace to the world." This, it is said, was passed by a minority of the 180 members of the Branch, so "it cannot be stated, therefore, that this resolu-

tion expressed adequately the position of the members even in March, much less that it expresses their position now."

It is denied, however, that this resolution was, as has been charged, a statement of a "peace at any price" policy. "It states, if anything," according to the new declaration, "a 'peace-it's wonderful' policy." (See *SNL*, June 1)

Reference is also made to a statement by the same group early in 1939 urging boycott of German scientific instruments and materials. (See *SNL*, April 8)

"The events of the past few months have demonstrated the ludicrous ineffectiveness of such measures," the present statement continues. "The Nazi system against which the boycott resolution was directed has since extended its dominion by brutal aggressions which feature the perversion of science and technology to promote destruction on an unprecedented scale."

Science News Letter, July 6, 1940

GENERAL SCIENCE

**Committee Urges Rescue
Of Exiles in France**

A LAST minute effort is being made in Washington by representatives of the American Committee for Democracy and Intellectual Freedom to obtain the intervention of the United States government and the Red Cross for the rescue of thousands of exiles in France in danger of their lives as a result of French capitulation to Germany.

These men and women "whose only crime is that they have fought for years to preserve democracy in Europe against the onslaught of fascism" are endangered by the provision in the French-German armistice that "the French government is to hand over all German subjects indicated by the German government who are in France or French overseas territory."

A delegation including Prof. L. C. Dunn of Columbia University, Oliver LaFarge, and Prof. Roland H. Bainton of Yale Divinity School is asking congressmen to support efforts to secure release of exiles from French concentration camps, to extend U. S. consular protection until evacuation through the Red Cross or other international relief organizations, and to provide the right of asylum in the United States.

Some of the exiles, among them the pediatrician Dr. Rudolf Neumann, already have visas for entry into the United States.

Science News Letter, July 6, 1940

IN SCIENCE

MEDICINE

**National Cancer Council
To Attack Stomach Cancer**

THE National Advisory Cancer Council is launching an attack on stomach cancer. It will sponsor a conference of experts in this field to be held in Washington on October 11 and 12. Dr. Ludvig Hecktoen, executive director of the Council, announced after a meeting at which plans for research on stomach cancer were discussed.

Cancer of the stomach is one of the forms of cancer against which cancer fighters have made slow progress, chiefly because of the difficulty of detecting cancer in the stomach in early stages when treatment would have most chance of success.

Science News Letter, July 6, 1940

METEOROLOGY

**27-Day Rotation Period
Found in Weather**

NEW evidence of the relation between solar activity and weather on earth is contained in the discovery by H. Helm Clayton, meteorologist, that a 27-day period is shown in weather records, corresponding to the rotation of the sun. His researches were announced by the Smithsonian Institution.

Past work has shown that there is an intricate connection between the sun's activity, shown by the varying number of sunspots, and weather. The spots become most numerous every eleven years, and weather changes over the same period have been found.

Spots, however, are not equally numerous over the entire sun. Since it turns once in 27 days, Mr. Clayton assumed that there ought to be 27-day weather cycles, as disturbed areas were successively aimed earthwards. This has now been found in a changing pattern of air currents.

However, the effects on weather are extremely complex, and will have to be worked out in further detail before they have much practical application in weather forecasting, it is stated.

Science News Letter, July 6, 1940

CE FIELDS

CHEMISTRY

Need Explosives Chemists For National Defense

IN ORDER that the National defense program may not be hampered by a lack of chemists familiar with explosives, the U. S. Civil Service Commission has just issued a special appeal for applicants to take the examinations now open for these positions. A large number of well-qualified explosive chemists and chemical technologists are wanted to be immediately available as vacancies occur.

Positions for which examinations have been announced pay salaries ranging from \$2,600 to \$4,600 per year. From states east of Colorado, applications must be on file in Washington not later than July 15. Applicants in Colorado, or farther west, have until July 18. Copies of announcements, and application forms, may be secured from the secretary of the Board of U. S. Civil Service Examiners, at any first or second-class post office, or from the offices of the Commission in Washington.

Science News Letter, July 6, 1940

AGRICULTURE

Foresee Restoration of Aristocracy of the Soil

THE RISE once more in this country of a true aristocracy of the land was predicted by Prof. Lawrence C. Wheating, State College of Washington research professor of soils, speaking before the American Association for the Advancement of Science. Social and scientific readjustments now underway will bring this about in Prof. Wheating's opinion.

"Land is the one natural resource that is capable of a continuous production of new wealth, year after year," Prof. Wheating said. "Other natural resources such as coal and iron, when once used are gone permanently, but the continuous production of crops on the same piece of land, when properly managed, yields a continuous flow of wealth that has never been in existence before."

"This attribute of land is of extreme importance to any nation. Most of the mercantile processes exist only by the exchange of wealth already gained from

the soil or through the final utilization of other natural resources. With the ultimate exhaustion of the latter, and the tying-up of profits from the exchange of goods, there would be no source of new capital were it not for the productivity of the land.

"The injection of \$8,000,000,000 of new wealth derived annually from the land, into the national economy, is the largest single factor keeping the wheels of our nation turning."

Not all land is equally useful for all purposes, Prof. Wheating observed. The most intensive land use, truck crop production, may bring annual gross sales amounting to \$1,000 an acre by producing several crops per year from the same acre. Forestry, at the other end of the scale, may require 100 years or more to mature a crop. In some cases, the time required for the release of vital nutrients to the crop is extremely important. A crop of green peas develops completely in 75 days, a corn crop in 90 days. Perennial crops on the other hand, may use 300 days to produce a single crop.

Science News Letter, July 6, 1940

ENTOMOLOGY

Scientist Offers Students Experimental Insects

OPPORTUNITY for student clubs to carry on studies with the same varieties of *Drosophila*, or fruit flies, that are used in advanced genetic researches is offered by the genetics department of Washington, from its laboratories in Cold Spring Harbor.

Drs. M. Demerec and B. P. Kaufmann state that they have stocks of the little insects, from which they can send sufficient specimens to start laboratory colonies. The flies will be shipped in small vials, with sufficient food to last them until they reach their new homes.

They can be raised in pint milk bottles, and all they need for their support is a bit of fermenting banana. Since they produce a new generation every two weeks they multiply rapidly, and for this reason are about the most useful of all organisms for demonstrating the operation of Mendelian principles of heredity.

It is proposed to ship the first insects about Sept. 15. Student science clubs interested in this work are requested to have their faculty advisers write to The *Drosophila* Laboratory, Carnegie Institution of Washington, Cold Spring Harbor, N. Y., about a month before they need their initial stock of fruit flies.

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PHYSICS

Super-Heavy Element Reported From Japan

MANUFACTURE of a very long-lived superheavy element, number 93, is reported by a team of Japanese scientists. (*Physical Review*, June 15) It is formed as the result of the bombardment of uranium, commonly accepted heaviest element and possible atomic power source, with fast neutrons.

In addition to splitting, the uranium under such treatment emits electrons or beta rays, with a period of 6.5 days. The result of this artificial radioactivity is the formation of the relatively stable element 93. The uranium or element 92 from which the element 93 is obtained is probably uranium of atomic weight 237 produced from uranium 238 by loss of a neutron.

The same issue of the *Physical Review* gives details of the discovery of element 94 and the positive identification of element 93 through research at Berkeley, California, previously announced.

The Japanese scientists who did their work at Tokyo were: Y. Nishina, T. Yasaki, H. Ezoe, K. Kimura, and M. Ikawa.

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GENERAL SCIENCE

British Intern Refugee Scientists From Germany

FACED with the Battle for England and a Nazi invasion, British scientists are backing their government's safety action interning all enemy alien scientific workers whether or not they are refugee scientists from Germany and other enemy countries.

Information contained in the British journal, *Nature*, (May 25) just arrived in this country, states that the general feeling is that any preferential treatment for scientific workers in connection with measures against fifth column activity "would carry with it a grave element of risk which cannot be justified."

The fear is that among the genuine anti-Nazi scientists from Germany, who have worked effectively in British universities and research centers, there may be some Hitler supporters who would be dangerous in time of invasion.

German anti-Nazi scientists who have been interned are reported to view the matter philosophically with the attitude that the action is good from Britain's point of view.

Science News Letter, July 6, 1940

NUTRITION

Food For Refugees

Red Cross Ship Is Carrying Canned Foods and Openers; Refugees Will Add Water to Powder to Make Good Soup

By JANE STAFFORD

KITCHENETTE cookery is going to war—or at least to the relief of war refugees in Europe. It is going via American Red Cross relief food supplies to provide an efficient and nutritionally sound method of feeding, adapted equally well for small families and for large-scale feeding of war refugees.

One of the incongruities coming out of the war will be the spectacle of French peasant women, famed for their soups and stews blended of many special ingredients and taking hours to cook, making soup for their families in a minute or two from an envelope of ready-to-serve ingredients such as American housewives use when they get home late from the office or a bridge party.

Those packages of dehydrated soups and vegetables dear to the kitchenette housewife because she can simply "add water and serve," make up an important portion of the tons of food supplies shipped by the American Red Cross for the relief of Europe's starving refugees.

As the kitchenette housewife knows, these dried soups and other dehydrated, ready-to-serve food products save space—a consideration of vital importance when food for refugees must compete with war supplies for space on ships and trains. They save time and work in preparation, important when food for hundreds of thousands of starving persons must be cooked in improvised, hastily equipped roadside or camp kitchens—or in the crude shelters refugee families may find for themselves.

Full of Calories and Vitamins

Equally important is the fact that these new, compact, ready-prepared foods are nourishing—full of calories and vitamins.

When the American Red Cross assembled supplies for its first Mercy Ship for European war refugees, most of the job of purchasing food supplies was turned over to the nutrition consultant of the Red Cross, Miss Melva Bakkie.

This meant that the food shipped was selected not only to relieve obvious hunger but so far as possible to stave off the "hidden hunger" for minerals and

vitamins that cripples, blinds, drives men crazy and kills though it may cause never a hunger pang.

For example, Miss Bakkie specified that the 100,000 pounds of molasses and syrups sent on the first shipment must be dark, because that kind is not only high in energy-supplying calories but contains iron in significant amounts to help build red blood.

Milk Biggest Item

One of the largest items shipped was 825,000 pounds of unsweetened evaporated milk, the safe, long-keeping, easy-to-use evaporated milk on which hundreds of thousands of American babies are fed daily.

Enormous as this amount may sound to the young mother who buys a dozen 14½-ounce cans at a time for her young infant, it is a mere drop in the bucket for refugee feeding. It would take at

least 350,000 pounds to furnish an adequate amount of milk for 100,000 refugees for one week. Miss Bakkie said, emphasizing that this was calculated on an adult basis and that for feeding that many children much more would be required.

Can Be Used Undiluted

Dried or powdered milk, which would save space in shipping, will not be sent until Miss Bakkie is sure the refugees or those feeding them know how to use it properly. Evaporated milk, she pointed out, can be drunk straight, if you do not know how to dilute it or if there is no safe water available for diluting it.

Evaporated milk may be an old story to American housewives, but the refugees are getting some new compact, ready-to-serve foods that may soon find their way to pantry shelves in this country, if they are not already there. One of these is a brownish powder, put up in transparent water-tight envelopes, which when water is added becomes apple sauce.



NEW STYLE RATIONS

Miss Kathryn Oakes of the Canteen Corps measures out a powder which when water is added will become a bowl of thick, delicious and nourishing soup. Beside her are stacked the various types of add-water-and-serve foods that are being shipped to war refugees.



SHE DID THE BUYING

Charged with the duty of purchasing most of the Red Cross food supplies for the European hungry is Miss Melva Bakkie.

Handy for the hurried housewife, this dried apple product is more than handy for refugee feeding. It not only supplies the vitamins and other nutritional ingredients of apples but has medicinal value as well. Dried apple powder has been used for several years in the treatment of diarrheal disorders, such as are likely to be a medical problem in the refugee camps.

Beverage from Bananas

Banana tablets are also crossing the ocean to feed refugees. These come in several forms. Some are about the size of a candy bar and others about the size of a cake of yeast. Some are made of dried banana and dried milk solids, others of banana, milk and chocolate. Besides the calories of fat, protein and sugar or starch these little tablets contain, they have vitamin A and members of the vitamin B complex. They are meant to be used as a beverage by mixing with hot or cold water, but they could be eaten like candy if no water were available, though Miss Bakkie said

they taste better as a beverage than as candy. The tablets were specially prepared for the Red Cross for convenience in refugee feeding.

On Miss Bakkie's desk when I interviewed her were small sample boxes of green and yellow powder. When put in hot water, she said, these become "very thick and delicious" yellow or green pea soup, with a high content of vitamin B₁. One pound of this dried pea soup, costing nine and one-half cents (\$0.094) wholesale, makes about one and one-quarter gallons of good, concentrated soup. Ten ounces of another brand makes five quarts of soup. Dried tomato soup chips are also available for the kitchenette housewife, the camper and the explorer and will be sent to the war refugees.

Vitamin C Next Time

Because of space limitation, the first Red Cross food shipment did not carry as much vitamin C containing foods as Miss Bakkie would have liked. One product with which she hopes to make up this deficiency on the next shipment is a vitaminized dried beverage. This is made of dried fruit juice, a binder and sugar, plus crystals of vitamins B₁ and C.

This is another of the "add water and serve" products which should be popular at home as well as valuable for refugee feeding. It comes in seven flavors: orange, grape, raspberry, cherry, lime, lemon and fruit punch. Each eight-ounce glassful is said to supply more than half of the estimated minimum daily adult requirement of vitamins B and C.

Sugar, lard, flour, cornmeal, dried fruits other than the powdered varieties and sweet milk cocoa containing whole and skim milk solids make up the rest of the first food shipment.

No kitchenette housewife is supposed to be able to get a meal without her trusty can opener. When war refugees start their kitchenette cookery with American Red Cross food supplies, they will have can openers, too. In fact, with the universal European custom of wine drinking in mind, the type sent is the combination can and bottle opener variety.

The can opener is just one of the many household utensils, ranging from soup kettles and 10-quart pails to spoons and forks, that were sent along with the food.

So science which has made life easy for American housewives has come to the aid of mercy, giving it increased efficiency to match the increased efficiency

and destructiveness of modern methods of waging war. Refugees by the hundreds of thousands from war zones in Europe will be fed better and more easily as a result of peacetime scientific developments in nutrition and in processing of foods.

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ORNITHOLOGY

Eagle Guards Save Desert Power Lines

"EAGLE GUARDS" have had to be installed on poles of a 20,000-volt power line that crosses the desert area of the Snake River valley in southern Idaho because eagles and large hawks had taken to perching on the cross-arms, in the absence of trees. Short circuits of course frequently resulted, with serious effects on the power supply—and even more serious effects on the birds.

The "eagle guard" consists of a simple frame of light wood pieces, nailed to the cross-arms and projecting above the wires. William H. Marshall of the U. S. Biological Survey, who reports the installation of the devices, states that they are put up without turning off the current, so that the work "is recommended only for those with steady nerves who are used to working around such equipment."

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TEXTILES

New Fabrics Defy Wrinkles, Damp, And Even Germs

Wool Is Now Made Unshrinkable and Shoe Linings Sanitary; U. S. Bureau Kept Busy With Tests

"CREASE-RESISTANT sports cottons, gingham, and lawns are now available, as well as the more familiar voiles that defy wrinkling, and these fabrics are practically a 'must' in every woman's wardrobe."

So the American Home Economics Association, meeting in Cleveland, was told by Miss Margaret S. Furry of the U. S. Bureau of Home Economics.

The crease-resisting process, she declared, is beyond doubt the outstanding development in fabric finishing since mercerizing was discovered, which was a good many years back.

One job of the Bureau is testing and comparing durability of the new specialized fabric finishes, which are coming thick and fast these days. The Bureau itself has even developed some finishes.

Here are some of the newest ideas and suggestions, reported by Miss Furry:

How long crease-resistant fabrics remain that way depends largely on laundering care. Rayons and linens particularly need lukewarm water, neutral soap. For cottons, laundering methods are not so important.

Fabrics that need no starching are on the market, stiffened by dissolving some of the cellulose so that the woven yarns tend to fuse where they cross. The process is especially good for voiles and lawns, Miss Furry said.

There are voiles even that manufacturers claim will not soil so easily as untreated cottons, that will not wilt in dampness or become linty after washing.

To prevent rayon linings from fraying or becoming distorted at seams, they can be coated with synthetic resins, which interlock the warp and filling yarns, firming the cloth.

The sheen of glazed chintz is preserved when it is treated with synthetic resins, crystal clear and insoluble either in soap and water or in dry cleaning solvents.

Wool is being made unshrinkable by treatment with sulphuryl chloride. Manufacturers say the wool is usually stronger, too.

Shoe lining fabrics can be made anti-septic and germicidal. And by applying sanitary finishes to certain goods, such

as mattresses, manufacturers are claiming that these products reach the consumer in sterile condition regardless of handling.

A new water-repellant finish suitable for silk, cotton, rayon, and linen, is radically different from other types on the market. Achieved by a complicated chemical compound, it is not removed by washing or dry cleaning, and it makes the fabric resistant to perspiration and stains.

No less than 30 good ways of protect-

CHEMISTRY

Synthetic Cleansing Agents May Be Used Against Germs

Discovery That New Soaps and Shampoos Can Stop Bacterial Growth May Aid Fight Against Tooth Decay

DISCOVERY of the germ-stopping power of modern synthetic cleansing agents—soaps and shampoos to the layman—may provide scientists with a new class of chemical weapons against disease, including tooth decay.

Experiments in this direction are now under way at the University of Chicago, Dr. Benjamin F. Miller and Dr. Zelma Baker report. (*Science*, June 28)

Three of the cleansing agents, with the trade names Damol, Emulsol-605 and Emulsol-606, are relatively non-poisonous and non-irritating to mice and rabbits, the Chicago scientists have discovered. They stop the growth of germs in the test tube. Their protective action towards experimentally induced germ diseases is now being investigated.

One of the cleansing compounds, Zephiran, is already under study as an anti-tooth decay weapon. The germ-killing power of this substance was announced by Prof. G. Domagk, of Germany, the man who gave sulfanilamide to the world. Tests of Zephiran by the Chicago scientists showed that it promises

ing from mildew such materials as unbleached cotton duck have been found by the Bureau of Home Economics in efforts to develop finishes that may be applied at home. Ten of the 30 could be applied at home, and the Bureau is now testing their effectiveness in battling mildew after exposure to weather, repeated laundering, and storage.

Although the various new finishes are intended to be permanent, at present they rarely last the full life of the fabric, Miss Furry explained, but proper care will often prolong their effectiveness. Shoppers, these days, do well to examine guarantees and informative labels on materials, she advised, for most of the special finishes increase serviceability, without changing appearance of the fabric. Labels should tell the buyer how durable the finish is, what she can expect in wearing quality, and how to care for the fabric to get the best service.

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to fight tooth decay in two ways: 1. by killing germs; 2. by stopping production of lactic acid which, in high concentration, can destroy tooth enamel and thus give decay a chance to start.

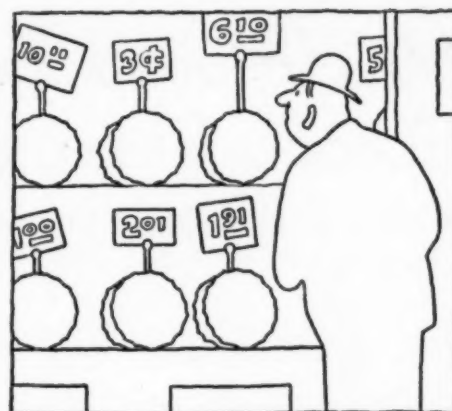
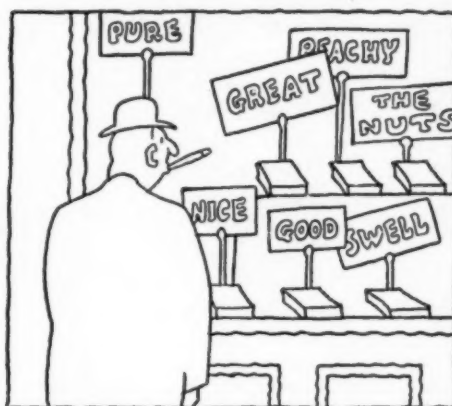
The new cleansing agents were developed to meet various special demands of industry. More than 1,000 of them have been patented within the past decade. They have long, chemical names. Zephiran, for example, is alkyl dimethyl benzyl ammonium chloride. Another, with the trade name of a much advertised shampoo, is triethanolamine lauryl sulfate. One of them is sulfonated castor oil.

The killing power of some of these chemicals is effective against germs of both gram negative and gram positive groups. All germs belong to one or the other of these groups, depending on how they take a certain stain. Alkalinity and acidity can enhance or decrease the germ-stopping power of the cleansing agents. This depends on whether the cleanser is a cationic (electropositive) or anionic (electronegative) compound.

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WATCH OUT MISTER

DO YOU BUY BY PRICE? ►



◄ DO YOU BUY BY BRAND?

—THAT'S NO JOB FOR AN AMATEUR!

MAYBE it used to be. Maybe—in simpler days—buying was a job that anyone could do reasonably well. But it just ain't so any more. Not when there are 4,500 brands of canned corn alone on the market. Not when conflicting advertising claims conduct daily blitzkriegs on your common sense.

The fact is that the market place has been getting more and more complicated. The most honest of advertising can't help the consumer much in making comparative selections. And price, as the economists have been showing, has in numerous cases almost lost meaning as a guide to quality.

Particularly now—in a time of war—is the lot of the consumer not a happy one. Prices rise, quality declines. The all-wool blanket you bought two months ago may, two months from now, be 25% rayon and two inches smaller. Maybe you'll be told about the change, maybe you won't.

FOR 85,000 FAMILIES all over America, Consumers Union is providing answers to the questions which grow out of these facts. For 85,000 families Consumers Union has become a guide through the maze of the market place—a guide which was never more valuable than right now.

Consumers Union offers you a way to get what you want and to know what you're getting. Consumers Union cuts through advertising claims, gets to the truth about products. Consumers Union gives you—simply, readably, directly—the findings of unbiased technical tests and examinations.

Consumers Union has one job to do. It won't help you evaluate the course of the war. It won't try to make up your mind about a Presidential choice. But it will help you to make your money go further—it will help you to buy both wisely and well. And we submit that in these days that's a job worth our doing—and your supporting.

HERE IS WHAT YOU GET

Look over this partial list of reports in the current (June) issue of *Consumers Union Reports* (the information given you in a single one might save you enough to pay for a year's membership):

PORTABLE RADIOS

Just how good are they as radio sets? An answer to this question and ratings of 15 widely-sold models.

GINGER ALE AND CLUB SODA

Ratings of 20 brands of club soda and 26 brands of ginger ale.

NYLON STOCKINGS

A comparison—under the camera—of nylon, the new Gotham cotton, and a standard silk hose.

ELECTRIC FANS

Test results on 47 models of 15 widely-sold brands, with comparative data on general efficiency.

MEN'S SUMMER SUITS

Some notes on popular types of fabrics to guide you in the selection of a summer suit.

TALCUM POWDERS

Ratings of 49 brands and results of a highly revealing "smell test".

CANNED TOMATO JUICE

How 69 leading brands rate as to price and quality, based on U. S. Government tests of 208 samples.

HAY FEVER

Some things you ought to know about the treatments, helpful and otherwise.

Along with a year's issues of the monthly Reports, each CU member gets the confidential *Buying Guide*—a compact volume containing a veritable storehouse of ratings and buying information. New members now get the 1940 *Buying Guide Supplement* just published and—later this year—the 1941 Guide.

COMING!

SPECIAL PHOTOGRAPHIC REPORTS

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6SNO

MEDICINE

59 Hospitals And Medical Schools Respond To Call

Chief Object of Organizing Now Is To Prepare Groups Used To Working Together; Limited to Officer Personnel

FIFTY-NINE of the nation's hospitals and medical schools have responded to the War Department's request to organize war hospital units for M-Day.

In all but a few of these institutions the units are now being organized. Formal notification that units will be organized is expected from the rest as soon as board or staff meetings can be held. Commissions in the Medical Corps Reserve of the U. S. Army are being prepared for some 1,500 physicians and surgeons now on the staffs of medical schools and hospitals who will serve as officers of their units when or if M-Day comes.

The 50 hospital units supplied by medical schools and hospitals during the World War were the backbone of our hospital service overseas in 1917 and 1918, Army medical officers state. Remembering the valiant service performed by these units at that time, the Surgeon General about a year ago decided to call on their sponsoring institutions again to prepare for another military emergency.

At the time of the World War, these hospital units were organized through the American Red Cross and equipped themselves. Today they are being organized through the Army which will also equip them. So far as possible, the units will carry their old names. Bellevue Hospital in New York, for example, which organized Base Hospital No. 1, is now organizing the 1st General Hospital.

Base hospitals are now called General Hospitals. M-Day plans call for 32 of these, 17 Evacuation Hospitals and 13 Surgical Hospitals to be organized by medical schools and large hospitals to serve as affiliated units of the medical department of the Army. The total of 62 such hospital units is called for by the Protective Mobilization Plan.

Peacetime organization of the affiliated hospital units is so far limited to officer personnel. Nurses, enlisted men and technicians will be enrolled later, the nurses and technicians probably through the American Red Cross, although insti-

tutions sponsoring the affiliated hospital units will probably be asked to make recommendations for some of these.

Chief object of organizing the officers now is to have ready at the very beginning groups of men used to working together. The efficiency and precision of a surgical team in the operating room has been perfected in most institutions to the point where the surgeon's assistants know so well how he operates that even in emergencies they will put into his outstretched hand the exact knife or forceps or other instruments he needs without a word being spoken.

GENERAL SCIENCE

Scientists And Physicians Listed For Defense

NATIONAL defense censuses of scientists, engineers and physicians are in prospect as a part of the accelerating mobilization of science and research to aid the government's gigantic military program.

Just as England, Canada and other nations listed their technically trained men and women in anticipation of war demands, steps are being taken to survey the available technical brain-power of America.

With the establishment of registers showing just what each scientist, engineer and physician can do and whether he is available for service, the government could bring to bear upon any problem the talents and skill of the best-equipped experts.

Most nearly mobilized is information upon the physicians of the nation. In the files of the American Medical Association at Chicago is information on all qualified physicians, hospitals, etc. By resolution adopted at the AMA convention in New York these facilities are put at the disposal of the nation as a matter of medical preparedness. It is likely that the more than 117,000 AMA physicians

This smooth teamwork will go forward even under the trying conditions of war surgery as a result of the way hospital units are now being organized. Another advantage of organizing units among men used to working together is that men working long hours with furious haste to repair war's grim ravages will be spared the added strain of taking orders from another doctor whose methods, because unfamiliar, may seem all wrong.

Organizing military medical services during peacetime has other angles. To take care of an army of 4,000,000 men, 30,000 doctors will be needed. The 15,000 medical reserve officers are sufficient to take care of immediate medical needs on M-Day, but more would be needed for a long war. To meet this need, without disrupting hospital and medical services behind the lines, and without getting any square pegs into round holes, the Surgeon General has asked the American Medical Association to assist in selecting physicians for war service if needed.

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will receive an inquiry asking them specifically about their availability for duty in an emergency. Many physicians are reserve officers in the medical corps of the Army and some 60 hospitals have organized hospital units that will be ready for service when and if army mobilization takes place.

A nation-wide census of 115,000 engineers and architects skilled in design and supervision of construction is underway by the American Society of Civil Engineers and the American Institute of Architects. Engineering and architectural firms, partnerships and individuals

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in private practise are being listed. A register of architects, engineers, draftsmen, surveyors and specialists will be prepared.

The American Mathematical Society is asking its members to notify its war preparedness committee, of which Dr. Marston Morse of Princeton is chairman, whether they have military connections or feel that they can contribute to military or naval science in a mathematical way.

The new National Defense Research Committee may in the near future undertake a census of scientists, but at present their work is being begun through contact with about 50 major universities and industrial laboratories to which research problems could be assigned.

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PALEONTOLOGY

Find Bones and Footprints Of Spotted Yellow Beast

A BROWNISH-YELLOW beast, with black spots, centuries ago leaped down a yawning cavern on a forested hillside in Tennessee—and because of that, a theory of science today is demonstrated.

Two boys, Clarence Hicks and Jack Kyker of Sweetwater, Tenn., in exploring far back in Craighead Caverns, discovered bones and later footprints which were identified by the American Museum of Natural History, New York, as those of an extinct race of jaguars which once roamed North America. Dr. G. G. Simpson, associate curator, went to the caverns to see the footprints and additional bones discovered. He made a cast of the footprints.

"The animal was closely related to the largest jaguars now found in South America," Dr. Simpson said. "The discovery is interesting, scientifically, because it proves a theory that the jaguars wandered down to South America, became extinct in North America and survived in South America. On this trip to the caverns I got more bones of the same species, including a piece of skull bone, with a big upper fang still embedded in the socket.

"I have worked quite a little in South America and have always been interested in proving where these animals came from; they wandered back and forth. This cave is one of the most fascinating places I have been in; it proves an important scientific theory."

Science News Letter, July 6, 1940



Survival of the Unfit

VERY few of our domesticated animals and plants would survive permanently if turned loose to shift for themselves. Usually the very qualities for which we prize and breed them would be fatal handicaps under conditions of natural competition.

Perhaps the most extreme and obvious case is that of seedless fruits. Fruits, in the wild, exist primarily for the sake of the seeds they contain. Naturalists generally agree that the attractive pulp and juice serve to bribe birds and other animals into acting as unconscious disseminators and propagators. Yet man eliminates the seeds wherever he can, keeping the unnatural trees and shrubs and vines alive by cuttings and grafts.

Something akin to this is done by man with plants which he grows primarily for their seeds, especially the grains. Cultivated corn and wheat are unable to survive for more than a season when chance sows their seeds, as often happens. This is due to the quality of hanging onto the seeds, that has been carefully bred into corn ears and wheat heads. Thus the seeds cannot become naturally scattered and prepared for another season's growth. Desirable for "gathering into barns," this non-shattering quality is the direct opposite of what is needed for natural survival.

We do the same things with our domestic animals. The long-legged, stringy, tough, well-horned wild cattle, that can hold their own against wolves and other enemies, have been changed by centuries of breeding into blocky-bodied, soft-fleshed, short-horned or hornless animals with very little fight in them.

It is the same way with pigs and sheep. The original wild strains were

long-legged, lean-bodied, wily and pugnacious rough-necks, with very little fat on them. They would hardly know their degenerate descendants of modern pastures and pens, and would doubtless despise them if they could see them.

When we breed a plant or an animal for ornament rather than for use we do even greater distortion upon the natural stock. Who would guess, for instance, that the ancestor of a Pomeranian or a Pekinese was either a wolf or the blood-brother of a wolf?

Science News Letter, July 6, 1940

ENGINEERING

Curves Replace Tedious Computations in Design

A SET of mathematical curves replaces weeks of laborious mathematical computations to allow aviation engineers to tell whether an airplane will "flutter" itself to destruction, W. B. Bergen and Lee Arnold, of the Glenn L. Martin Company of Baltimore told the Institute of Aeronautical Sciences meeting at the California Institute of Technology.

Development of a graphical solution of flutter instability in airplanes is expected to result in safer airplanes and more rapid design. Flutter is a vibration that builds up with increasing force until a wing, aileron or tail flies off and the airplane is lost. Many otherwise unexplained crashes have been traced to flutter.

Three years ago Martin engineers developed a vibration-detecting device that gave warning of dangerous conditions building up in an airplane during flight. The new work just reported will greatly simplify the computation of the critical conditions that warn when dangerous flutter is imminent.

Science News Letter, July 6, 1940

Butterflies generally have slender bodies, whereas the larger moths are stout.

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•First Glances at New Books

MEDICINE

YOUR ALLERGY AND WHAT TO DO ABOUT IT—Milton B. Cohen and June B. Cohen—*Lippincott*, 176 p., \$1.50. An interesting, clear and somewhat cheering book about hay fever, asthma and all the other allergies. Clever pen and ink sketches enliven the beginning of each chapter.

Science News Letter, July 6, 1940

CHEMISTRY

A TEXT-BOOK OF HEAT, Part I—H. S. Allen and R. S. Maxwell—*Macmillan*, 541 p., \$3.25. This British text is designed to fill a place between an elementary textbook and a comprehensive treatise. It makes splendid use of the historical method of approach.

Science News Letter, July 6, 1940

GENERAL SCIENCE

SCIENCE FOR NEW YORKERS—Alexander Joseph and Franklin B. Carroll—*Winston*, 7A, Air—Water, 166 p., \$1; 7B, Food—Sun—Energy, 159 p., \$1; 8A, Weather—Reproduction, 170 p., \$1.08; 8B, Astronomy—Bacteria—Communication—Transportation, 202 p., \$1.08; 9A, Air—Water—Food—Sun—Energy, 334 p., \$1.12.

Science News Letter, July 6, 1940

BOTANY

THE EVOLUTION OF THE LAND PLANTS (EMBRYOPHYTES)—Douglas Houghton Campbell—*Stanford Univ. Press*, 731 p., illus., \$6.50. An ambitious and exhaustive treatment of land plant phylogeny, from the point of view of morphology. The text is thorough and as complete as possible in a one-volume work, the chapter bibliographies well selected. Quality of printing in the illustrations leaves something to be desired.

Science News Letter, July 6, 1940

METEOROLOGY

THE 11-YEAR AND 27-DAY SOLAR PERIODS IN METEOROLOGY—H. Helm Clayton—*Smithsonian Inst.*, 20 p., illus., 15c. (*Smithsonian Misc. Coll.*, vol. 99, no. 5) See page 8.

Science News Letter, July 6, 1940

BIOLOGY

BIOLOGICAL SYMPOSIA, Vol. I—Jaques Cattell, ed.—*Jaques Cattell Press*, 238 p., \$2.50. Highly successful features of recent meetings of the American Association for the Advancement of Science have been symposia in which leading research workers have participated bringing

down to date information about their own work and that of outstanding colleagues. In this first volume are collected three symposia: The Cell Theory, Mating Types and their Interactions in the Ciliate Infusoria, and Chromosome Structure.

Science News Letter, July 6, 1940

EDUCATION

THE CHICAGO COLLEGE PLAN—Chauncey Samuel Boucher; rev. and enl. by A. J. Brumbaugh—*Univ. of Chicago Press*, 413 p., \$3. A revision after five years of the report on the educational technique inaugurated at the University of Chicago in 1931.

Science News Letter, July 6, 1940

ORNITHOLOGY

THE BIRDS OF BUCKEYE LAKE, OHIO—Milton B. Trautman—*Univ. of Mich. Press*, 466 p., 15 plates, 2 maps, \$2.50. (*Museum of Zoology, Misc. Pub.*, no. 44)

Science News Letter, July 6, 1940

CHEMISTRY

CHEMISTRY IN WARFARE, Its Strategic Importance—F. A. Hessel, M. S. Hessel and Wellford Martin—*Hastings House*, 164 p., illus., \$2. Here is a most timely book, that gives a concise, but complete account of the way chemical industry aids in war and the methods by which chemists protect and sustain both the fighting forces and civilians.

Science News Letter, July 6, 1940

GENETICS—SOCIOLOGY

HEREDITY AND SOCIAL PROBLEMS—L. L. Burlingame—*McGraw-Hill*, 369 p., \$3.50. A serious effort to apply principles of genetics to the problems of sociology—which is not the easiest task in the world, considering the complexity of the phenomena in both fields, and the degree to which some of the earlier eugenics doctrine became cluttered with gratuitous assumption and downright faddism.

Science News Letter, July 6, 1940

CHEMISTRY

TEXTILE TESTING, Physical, Chemical and Microscopical—John H. Skinkle—*Chemical Pub. Co.*, 267 p., illus., \$3. The tests given here might be used either by the consumer, who wished to check the quality of the textiles used in his clothing, or by the merchant. The book is modern enough to include tests for nylon.

Science News Letter, July 6, 1940

CHEMISTRY

THE NATURE OF THE CHEMICAL BOND AND THE STRUCTURE OF MOLECULES AND CRYSTALS (2d ed.)—Linus Pauling—*Cornell Univ. Press*, 450 p., \$4.50. In 1937-38 Dr. Pauling held the George Fisher Baker Lectureship at Cornell. His lectures were published in the first edition of this work. In the second edition he has included references to recent work, especially in the field of modern structural chemistry, which has made progress in the determination of the structures of a number of interesting molecules and crystals.

Science News Letter, July 6, 1940

POLITICAL SCIENCE

PUBLICITY AND DIPLOMACY, With Special Reference to England and Germany, 1890-1914—Oron James Hale—*Appleton-Century*, 486 p., illus., \$4. While another epoch or two has passed since the period covered by this book, with the need of a volume or two to cover these more recent times, there are backgrounds to 1940 presented in this study of how diplomatic finesse was displaced by modern propaganda.

Science News Letter, July 6, 1940

ECONOMICS

TRANSPORTATION, Economic Principles and Practices—Emory R. Johnson, Grover G. Huebner and G. Lloyd Wilson—*Appleton-Century*, 678 p., maps, \$4. Three professors in the Wharton School of the University of Pennsylvania have here produced an up-to-date and authoritative study of the economics and business of the transportation industry, including railroad, pipe-line, air, water and highway. Though designed for college text, it should be of great value to anyone interested in transportation problems of the present.

Science News Letter, July 6, 1940

PHYSICS

MAGNETISM AND VERY LOW TEMPERATURES—H. B. G. Casimir—*Cambridge (Macmillan)*, 93 p., \$1.40. By magnetic methods it has been possible to obtain temperatures of only a small fraction of a degree in the Kelvin scale. In this revision of a series of lectures he gave at Cambridge University in 1938, the technical points are discussed by a physicist from the Kamerlingh Onnes Laboratory of the University of Leiden, where the most important low temperature research has been carried out.

Science News Letter, July 6, 1940